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NOTES FROM PACIFIC COAST OBSERVATORIES.

Note on the Five-foot Reflecting Telescope of the Solar Observatory.

The five-foot reflecting telescope, work on which was begun in 1897 at the Yerkes Observatory, is now being completed, and will be erected on the summit of Mt. Wilson, where it will form a part of the equipment of the Solar Observatory of the Carnegie Institution. About one year's work was done on the five-foot mirror by the writer, while at the Yerkes Observatory, and much time was spent there upon the design of the mounting for the instrument. An account of this work, so far as it had progressed at the Yerkes Observatory, will be found in *Smithsonian Contributions to Knowledge,* Vol. XXXIV, 1904.

In April of this year the five-foot mirror and its grinding and polishing machine were brought to Pasadena. The mirror was protected from jar during transportation by an effective system of cushions and spiral springs, in connection with three boxes or cases, used one outside of another. The long railroad journey from Williams Bay to Pasadena was made without the slightest injury to the glass, and without affecting the perfect surface of revolution, as has been shown by optical tests since its arrival here. The mirror is being polished and figured in the Observatory instrument-shop in Pasadena, which is thoroughly equipped both for optical work on a large scale and for the construction of the metal parts of the instruments for the new observatory. As the instrument-shop was designed specially for this work, the arrangement and construction of the rooms of the optical department are unusually well-adapted to secure the conditions necessary in large optical work, such as constant temperature and freedom from dust; very complete facilities are provided also for the rigorous testing of optical surfaces.

Many of the metal parts of the five-foot reflector mounting are much too large to be machined in the observatory shop. These large parts are being made by the Union Iron Works Company of San Francisco; they comprise a very large proportion of the total weight of the mounting, and include the base casting, in two sections, the south and north bearings for supporting the polar axis, the polar axis, the float, the mercury trough, the fork, the short cast-iron part of the tube, the declination trunnions, the ten-foot worm-gear, the seven-foot bevel-gear, and some other minor parts. The polar and declination axes are hollow nickel-steel forgings, oil-tempered; they were hydraulic-forged, tempered, and rough-turned by the Bethlehem Steel Company, of Bethlehem, Pa., and are being finished at San Francisco by the Union Iron Works Company, all of the cylindrical surfaces being ground. It is expected that the Union Iron Works Company will finish their part of this work in three or four months from the present date. The heavy parts of the mounting will then be assembled at the observatory shop in Pasadena, where it will be necessary to construct a special temporary iron building, with a powerful crane for the purpose of erecting the mounting, as it seems indispensable that the instrument be completed, set up, and thoroughly tested in every way before being taken up the mountain.

All of the smaller and more complicated parts of the mounting will be constructed in our own shop, and this work is already well under way. These parts include the driving-clock and clock connections, the motor connections for quick and slow motions in right ascension and declination, the skeleton tube with interchangeable ends, the mirror cells, with the support systems for the mirrors, etc. The cutting and grinding of the teeth of the ten-foot worm-gear will also be done here.

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THE ORBITS OF VISUAL BINARY STARS.

In *Lick Observatory Bulletin* No. 84 I have given the results of a study of all published double-star orbits. This paper will be of interest primarily to double-star observers, as it consists mainly of a table of the best orbit data (in my judgment) of those stars for which fairly satisfactory orbits have been